

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

The underlying purpose and need to which the MMS is responding is to provide an alternative energy facility that utilizes the unique wind resources in waters offshore of New England using a technology that is currently available, technically feasible, and economically viable, that can interconnect with and deliver electricity to the New England Power Pool (NEPOOL), and make a substantial contribution to enhancing the region's electrical reliability and achieving the renewable energy requirements under the Massachusetts and regional renewable portfolio standards (RPS).

Cape Wind Associates, LLC (the applicant) proposes to build, operate, and eventually decommission a wind energy facility with a maximum electric output of 468 megawatts (MW) in Nantucket Sound off the coast of Massachusetts. The proposed action would generate electricity from wind energy resources on the Federal OCS. The applicant seeks to commence construction of the proposed action in 2009 and begin full operation in 2011.

The applicant requests a lease, easement, right-of-way (ROW) and any other related approvals from Minerals Management Service (MMS) necessary to authorize construction and operation of the proposed action. The MMS's authority to approve, deny, or modify the Cape Wind Energy Project derives from the Energy Policy Act of 2005 (EPAc – <http://www.mms.gov/2005EnergyPolicyAct.htm#Renewables>). Section 388 of the EPAc amended the OCS Lands Act by adding subsection 8(p), which authorizes the Department of the Interior (DOI) to grant leases, easements or ROWs on OCS lands for activities that produce or support production, transportation, or transmission of energy from sources other than oil and gas, such as wind power.

The Massachusetts and other regional RPSs mandate that a certain amount of electricity come from renewable energy sources, such as wind. Specifically, the Massachusetts RPS regulations at 225 CMR 14.00 require that all retail electricity providers in the state utilize new renewable energy sources for at least 2.5 percent of their power supply in 2006 and increasing this percentage to 4 percent by 2009.

Since 1995, the Massachusetts Energy Facilities Siting Board (EFSB) has authorized more than a dozen fossil fueled power plants with nominal generating capacities that range from approximately 200 MW to 1500 MW, with an average generating capacity of approximately 500 MW. The applicant seeks to construct a similar large size "commercial" scale project that would satisfy a substantial portion of the projected Massachusetts 2009 RPS requirements¹, while also providing the generation capacity needed to respond to the magnitude of the regional reliability requirements.²

The NEPOOL operates as a tightly integrated system for purposes of both dispatch and compliance with reliability standards, including standards as to adequacy of generation resources. The Independent System Operation New England (ISO-NE) 2005 Regional System Plan (RSP05) for NEPOOL considered the constraints upon potential energy imports into NEPOOL and found that in order to adequately supply

¹ Based on the distribution of wind speeds monitored at the site, the net annual energy production the proposed action would deliver to the regional transmission grid would be 1,600 giga watt hours (GWh) (equivalent to an average of 182.6 MW), which would be approximately 75 percent of the 2009 projected RPS requirement of 2,100 GWh (2004, MA RPS Annual Compliance Report).

² NEISO conducted a system-wide analysis of energy demand and concluded that New England needs approximately 170 MW of additional electricity production resources before the summer of 2010 and increasing annually to 2100 MWs of additional capacity by 2014 to meet New England's electricity reliability requirements (ISO Regional System Plan, 2005).

operable capacity, New England will need to begin to supply its own resources and rely less heavily on neighboring systems for capacity during the 2009 through 2013 planning period (ISO-NE, 2005).

The EFSB found there was a need for at least 110 MW of energy resources beginning in 2007 with a much greater need within the following years (EFSB Siting Decision, 2004). The EFSB also found a need in New England for the capacity that would be provided by the proposed action for reliability and economic purposes.

The New England region is heavily dependent on natural gas to meet its increasing demand for energy. In New England natural gas accounts for 18 percent of the region's total energy consumption and approximately 40 percent of the fuel used to generate electricity, and consumption of natural gas is expected to increase 31.6 percent by 2024 (The Power Planning Committee of the New England Governor's Conference, 2005). In addition, more than 9,000 MW of planned gas-fired power plants are considered likely to be built in New York, Ontario, and Quebec, which would in turn compete with New England's limited gas supply and delivery infrastructure. The ISO-NE has stated that over-reliance on natural gas subjects the New England region to substantial price fluctuations that are influenced by a variety of market-based factors (i.e., exercising of natural gas contractual rights, tight gas spot-market trading), and physical factors (i.e., pipeline maintenance requirements and limited pipeline capacity). Over-reliance on natural gas and other fossil fuel sources (e.g., coal) for the generation of electricity also subjects the region to adverse air quality impacts associated with ground level ozone. There is, therefore, a need for projects in New England that aid in diversifying the region's energy mix in a manner that does not significantly contribute to the region's existing air quality concerns.

In summary, this draft Environmental Impact Statement (draft EIS) assesses the physical, biological and socioeconomic, and human impacts of this proposed action and all reasonable alternatives, including no action, in an objective fashion in order to determine if the proposal is environmentally sound. A final decision would account for the regional, state and local benefits and impacts as well as for the overall public interest of the United States.

1.2 STATUTORY AND REGULATORY FRAMEWORK

The following information provides a discussion of Federal and State reviews required, including legal authority, jurisdiction of the agency, and the regulatory process involved. The information is also summarized in [Table 1.2-1](#).

1.2.1 Federal Review

1.2.1.1 Outer Continental Shelf Lands Act of 1953 (OCSLA) as Amended on August 8, 2005

In November 2001, the applicant filed a permit application with the U.S. Army Corps of Engineers (USACE), New England District, under Section 10 of the Rivers and Harbors Act of 1899, in anticipation of constructing a wind energy facility located on Horseshoe Shoal in Nantucket Sound, Massachusetts. However, the EPA³ amended the OCSLA (67 Stat. 462, as amended, 43 U.S.C. §1331 et seq.) to grant primary authority to the DOI to authorize alternative energy projects on the OCS (43 U.S.C. 1337(p)(1)(C7)). The Secretary of the Interior has delegated primary responsibility for the environmental analysis and regulatory oversight of such projects, including the proposed action, to the MMS.

³ Enacted on August 8, 2005.

The applicant requested from MMS a lease, easement, ROW and any other related approvals to construct and operate the proposed action located on Federal submerged lands offshore of Cape Cod, Massachusetts. This draft EIS is prepared relevant to the authority granted to the Secretary of the Interior under Section 388 of the EAct (Pub. L. 109-058) and in accordance with the National Environmental Policy Act of 1969 (NEPA).

1.2.1.2 National Environmental Policy Act of 1969

The NEPA of 1969 (42 U.S.C. 4321 *et seq.*) was implemented to ensure that Federal agencies consider the environmental impacts of their actions, and protect the quality of the environment through consideration of alternatives that would serve to avoid or minimize damage to the environment. The Council on Environmental Quality (CEQ) Regulations for implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508) state that Federal agencies shall integrate the NEPA process at the earliest possible time to ensure that the agency makes informed permitting decisions to avoid delays later in the process, and to head off potential conflicts.

The NEPA requires that Federal agencies produce detailed statements on the environmental impacts of proposed major Federal actions significantly affecting the quality of the human environment. On May 30, 2006, the MMS published a Notice of Intent (NOI) to prepare an EIS in the *Federal Register* (FR) requesting written scoping comments and inviting participation by cooperating agencies. As the lead agency in the NEPA process, the MMS is required to prepare the draft EIS, accept public and agency comments, and produce a Record of Decision (ROD). Based on the findings of the NEPA documentation and other information, the MMS would determine whether to authorize the proposed action.

1.2.1.3 Section 10 of the Rivers and Harbors Act of 1899, and Section 404 of the Clean Water Act (CWA)

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401 *et seq.*) prohibits the unauthorized obstruction or alteration of any navigable water of the U.S. The construction of any structure in or over any navigable water of the U.S., the excavating from or depositing of dredged material or refuse in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful without prior approval from the USACE. The legislative authority to prevent inappropriate obstructions to navigations was extended to installations and devices located on the seabed to the seaward limit of the OCS by Section 4(e) of the OCSLA of 1953, as amended.

Section 404 of the CWA (33 U.S.C. §1344) prohibits discharges of dredge or fill material into waters of the United States, including wetlands without a permit from the USACE. Waters of the United States include those waters and their tributaries, adjacent wetlands, and other waters or wetlands where degradation or destruction could affect interstate or foreign commerce. Section 404 of the CWA defines the landward limit of jurisdiction as the high tide line in tidal waters and the ordinary high water mark as the limit in non-tidal waters. When adjacent wetlands are present, the limit of jurisdiction extends to the limit of the wetland. The seaward limit is the 3.5-mile (5.6 km) state limit.

The installation of the Wind Turbine Generators (WTGs) and ESP, the installation of the submarine cable systems, and the cable landfall transition structures would be subject to regulatory permitting review and approvals under Section 10 jurisdiction, because the proposed action would be located in designated navigable waters of the United States.

An Individual Permit application requesting Section 10 approval was filed on November 21, 2001, and the applicant provided the USACE with information with respect to project modifications on June 30, 2005. In addition, the applicant will be required to update the USACE application to reflect Section 404 jurisdiction, which would be triggered as a result of the backfilling of a dredged area in the ocean. The

dredged area would be temporarily used for the horizontal directional drill operations associated with the installation of the submarine transmission cable where it comes ashore and then backfilled after construction is completed (see Section 2.3.6).

Note that in November 2001, the applicant filed an application with the USACE under the Rivers and Harbors Act of 1899 (“Section 10 Permit”) to construct and operate a Scientific Measurement Devices Station (SMDS) in Nantucket Sound. The USACE issued a Section 10 Permit for the SMDS on August 19, 2002, stating that “the data tower shall be completely disassembled and removed from the waterway within five years of the start of construction.” On August 3, 2006, the applicant requested that the USACE modify the condition in the Section 10 Permit to require the removal of the SMDS by October 31, 2012, and the USACE approved the time extension.

1.2.1.4 Clean Water Act - National Pollutant Discharge Elimination System

The U.S. Environmental Protection Agency (USEPA) is responsible for implementing certain provisions of the CWA regulations, 40 CFR Part 122 to 125. The CWA prohibits the discharge of pollutants into waters of the United States unless a National Pollutant Discharge Elimination System (NPDES) permit has been issued (33 U.S.C. § 1342). The NPDES storm water permit program requires operators of a construction site one acre or larger to obtain authorization to discharge storm water under a NPDES Construction Storm Water Permit. The overall goal of this permit is to protect the quality and beneficial uses of the surface water resources from pollution in storm water runoff from construction activities. This goal is achieved through the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and associated Best Management Practices (BMPs).

Installation of the proposed onshore transmission lines and associated components would require a NPDES General Stormwater Construction permit. The proposed onshore transmission line route is approximately 5.9 miles (9.5 kilometers [km]) in length and therefore construction activities would result in the alteration of more than one acre. A NPDES NOI for construction activities that includes general project information and certification that the activity would not impact endangered or threatened species would be submitted to the NPDES permitting authority. An application for a NPDES General Stormwater Construction Permit would be filed prior to commencement of construction.

1.2.1.5 Section 7627 of the Clean Air Act (CAA)

The USEPA is also responsible for implementing sections of the CAA (42 U.S.C. 7627) relating to air emissions from certain OCS activities. Section 7627 was added to the CAA by amendment in 1990 in order to establish requirements for controlling air emissions from “sources” on the OCS in order to attain and maintain Federal and State ambient air quality standards. The regulations of the USEPA under Section 7624 (40 CFR 55.1, et seq.) define an “OCS Source” subject to such provisions as any equipment, activity, or facility that: (1) emits or has the potential to emit any air pollutant; (2) is regulated under the OCSLA; and (3) is located on the OCS or in or on waters above the OCS. With respect to vessels, Section 55.2 of the Regulations specifies that vessels shall not constitute an “OCS Source” unless they are: (1) permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources there; or (2) physically attached to an OCS facility. It further provides, however, that the emissions of vessels associated with an OCS Source shall be considered direct emissions of such a source while at the source, and while en route to or from the source when within 25 miles (40.2 km) of the source.

The applicant is seeking a permit from the USEPA under the foregoing provisions for its activities on the OCS during construction. During the operational phase, there would also be equipment and activities that would emit air pollutants or constitute an “OCS Source” and would be subject to EPA permitting.

Section 55.4 of the USEPA regulations requires an applicant to submit an NOI to the USEPA, with copies to the air pollution control agencies of the nearest onshore areas adjacent, not more than 18 months prior to submitting an application for a preconstruction USEPA permit. The NOI information includes the facility description and estimates of potential emissions, and emissions from vessels associated with the proposed OCS Source when at or en route to or from the OCS Source, as referenced above. The applicant filed an NOI with the USEPA on December 7, 2007. The EPA will review the NOI and determine whether air modeling is required, and coordinate the establishment of an appropriate air quality modeling protocol as necessary.

1.2.1.6 United States Code 49, Section 44718

The Federal Aviation Administration's (FAA's) authority to promote the safe and efficient use of the navigable airspace, whether concerning existing or proposed structures, is predominantly derived from 49 U.S.C. 44718. Title 14, CFR, Part 77, Objects Affecting Navigable Airspace, was adopted to establish notice criteria for proposed construction or alteration that would protect aircraft from encountering unexpected structures. The regulations apply to structures located within any state, territory, or possession of the United States, within the District of Columbia, or within territorial waters (13.8 miles [22.2 km]) surrounding such states, territories, or possessions.

Any vertical structure greater than 200 feet (ft) (61 meters [m]) in height must have FAA approval to avoid or minimize obstruction to navigable air space. The height of individual WTGs would exceed this 200-foot threshold (overall height of 440 ft [134 m] mean sea level [MSL]), and therefore require FAA approved lighting/markings. All 130 WTGs are subject to FAA review and authorization. On September 25, 2002, the applicant filed a Notice of Proposed Construction or Alteration (FAA Form 7460-1) with the FAA, pursuant to 14 CFR Part 77, Objects Affecting Navigable Airspace, for each proposed WTG location. The FAA issued a Determination of No Hazard to Air Navigation on April 9, 2003 ([Appendix E](#)).

On August 27, 2004 the applicant requested an extension on the April 9, 2003 Determination due to delays in obtaining permits to start construction. The FAA granted the extensions on October 5, 2004. The FAA initiated an appeal of the original April 9, 2003 determinations based on their receipt of two petitions requesting discretionary review of the determinations. The FAA reviewed the new information submitted and upheld the original Determinations on February 2, 2005. As a result of the reconfiguration of the WTG's, design changes that increased rotor height from 417 ft (127 m) to 440 feet (134 m), and the release of new lighting guidelines by the FAA, the MMS has requested a new letter from FAA to confirm that the proposed turbine locations would not have a negative impact on aviation.

1.2.1.7 U.S. Coast Guard (USCG) Regulations

Pursuant to 33 CFR part 66.0, Subpart 66.01 and under the provisions of 46 U.S.C. and 33 U.S.C. 30, the USCG has safety and regulatory jurisdiction over projects located in navigable waters of the United States. The proposed action constitutes a fixed structure in navigable waters of the United States, which requires private aids to navigation marking. A permit application to establish and operate Private Aid-to-Navigation to a Fixed Structure has not yet been filed.

All 130 WTGs and the ESP are subject to USCG review for authorization to mark and light the WTGs and ESP. The USCG Marine Safety Office for the Port of Providence, Rhode Island, which has jurisdiction over general navigation in the site of the proposed action, has coordinated a Navigational Risk Assessment. This Risk Assessment prepared at the direction of, and in consultation with, the USCG Marine Safety Office at the Port of Providence provides a qualitative assessment of navigational risks related to the proposed action. The analyses required by the USCG are outlined in a letter to the USACE dated February 10, 2003 ([Appendix E](#)). Subsequent to the release of the draft EIS/draft Environmental

Impact Report (draft EIR) in November of 2004, the applicant was required to revise the 2003 Navigational Risk Assessment to incorporate design changes and new information and to address topics requested by the USCG in its letter of February 14, 2005.

1.2.1.8 USCG Reauthorization Act of 2006

Section 414(a) of the Coast Guard and Maritime Transportation Act of 2006 (Public Law 109-241, H.R. 5681) requires the Commandant of the Coast Guard to “not later than 60 days before the date established by the Secretary of the Interior for publication of a draft environmental impact statement...specify the reasonable terms and conditions... necessary to provide for navigational safety with respect to the proposed lease, easement, or ROW and each alternative to the proposed lease, easement, or ROW considered by the Secretary (of the Interior).” The USCG has provided terms and conditions (see [Appendix E](#)) in response to this Congressional mandate. The terms and conditions are considered by the Coast Guard to be reasonable and the minimum necessary to provide for navigational safety. The provision of the terms and conditions to MMS does not imply or indicate that the Coast Guard summarily approves or disapproves of the proposed action.

1.2.1.9 Executive Order 12898

The USEPA Headquarters Office of Environmental Justice defines environmental justice as the following:

“Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.” (Executive Order 12898, February 11, 1994)

The need to perform an environmental justice analysis for the proposed action is related to the establishment of Executive Order 12898, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations” (February 11, 1994). The order requires Federal agencies to consider disproportionate adverse human health and environmental impacts on minority and low-income populations.

The focus of an environmental justice analysis is the determination of whether the construction and operation of a proposed action would have both adverse and disproportionate impacts on minority and low income populations. Minority populations are generally defined by USEPA as areas that have a “meaningfully greater” percent of minorities than the general population in the surrounding area, and low income populations are defined based on the U.S. Census poverty statistics. In performing the environmental justice analysis, the MMS has used the methodology in USEPA’s “Final Guidance for Incorporating Environmental Justice Concerns in USEPA’s NEPA Compliance Analyses, April 1998.” Refer to the results of the Environmental Justice Review that are provided in the Socioeconomic section at 5.3.3.3. Information on agency consultations is provided in Section 7.0.

1.2.1.10 Coastal Zone Management Act Federal Consistency Review

Pursuant to 16 USC 1454 and 1465, the Coastal Zone Management Act (CZMA) requires that it be national policy to preserve, protect, develop, and where possible, to restore or enhance, the resources of the nation’s coastal zone. The mapped coastal zone of Massachusetts includes the lands and waters

within an area defined by the seaward boundary of the state's mapped territorial sea (generally 3.5 miles [5.6 km] from shore), extending from the Massachusetts/New Hampshire border south to the Massachusetts/Rhode Island border, and landward to 100 ft (30.5 m) inland of specified major roads, rail lines, or other visible ROWs. The coastal zone includes all of Cape Cod, Martha's Vineyard and Nantucket. Federal consistency jurisdiction extends to any federally licensed or permitted activities occurring in the OCS that may have a reasonably foreseeable effect on land or water uses or natural resources of the Massachusetts coastal zone (15 CFR 930.11(b)). The applicant filed with the Massachusetts Executive Office of Environmental Affairs, Coastal Zone Management Program for a Federal Consistency Certification on November 21, 2001. The consistency review (CZMA) is currently ongoing and being coordinated with the MMS.

MMS is also coordinating consistency review (CZMA) with the Rhode Island Coastal Resources Management Council. The Rhode Island Coastal Resources Management Council has requested that the applicant file for Federal Consistency Certification in Rhode Island to address work associated with the staging area in Quonset and any transportation of equipment that takes place in Rhode Island waters.

1.2.1.11 Oil Pollution Act of 1990

The Oil Pollution Act of 1990 (OPA) (33 U.S.C. 2701 to 2761) amended the CWA and addressed the wide range of problems associated with preventing, responding to, and paying for oil pollution incidents in navigable waters of the United States. It created a comprehensive prevention, response, liability, and compensation regime to deal with vessel- and facility-caused oil pollution to U.S. navigable waters. The OPA greatly increased federal oversight of maritime oil transportation, while providing greater environmental safeguards by: setting new requirements for vessel construction and crew licensing and manning, mandating contingency planning, enhancing federal response capability, broadening enforcement authority, increasing penalties, creating new research and development programs, increasing potential liabilities, and significantly broadening financial responsibility requirements. The OPA requires oil storage facilities and vessels to submit to the Federal government plans detailing how they will respond to large discharges. The OPA also requires the development of Area Contingency Plans to prepare and plan for oil spill response on a regional scale.

1.2.1.12 Endangered Species Act (ESA)

Section 7 of the ESA (P.L. 93-205, 16 U.S.C. 1531 et seq.) directs all federal agencies to use their existing authorities to conserve threatened and endangered (T&E) species and, in consultation with the USFWS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7(a) of the Endangered Species Act requires that Federal agencies ensure that activities they authorize, fund or carry out do not jeopardize the continued existence of listed species nor adversely modify any designated critical habitat of such species. In regards to the proposed action, MMS has been in informal consultation under Section 7(a)(2) of the ESA with both the FWS and NMFS since January 2006. MMS plans to initiate formal consultation under Section 7(a)(2) of the ESA following the date of the DEIS publication.

1.2.1.13 The Marine Mammal Protection Act (MMPA)

The MMPA of 1972 (16 U.S.C. 1361 et seq.) prohibits, with certain exceptions, the taking of marine mammals in United States waters and on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Congress defines "take" as "harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal."

The primary government agency responsible for enforcing the MMPA is the NOAA Fisheries Service (formerly the National Marine Fisheries Service), found in the Department of Commerce, National

Oceanic and Atmospheric Administration (NOAA). Under the MMPA, the Secretary of Commerce is responsible for ensuring the protection of cetaceans (whales, porpoises, and dolphins) and pinnipeds (seals and sea lions) except walruses. MMS has been informally consulting with NOAA Fisheries regarding the applicant's proposal since January 2006. This has included individual phone calls and emails between MMS and NOAA Fisheries. The Secretary of the Interior is responsible for ensuring the protection of sea otters, polar bears, walruses, and manatees. The species of marine mammals overseen by the Secretary of the Interior do not normally occur in the area of the proposed action. MMS notes that there is no required consultation under the MMPA between MMS and NOAA Fisheries/FWS and it is the responsibility of the applicant to seek authorization from these agencies under the MMPA (if needed). In addition to encouraging voluntary consultation, MMS will help ensure compliance with the MMPA by requiring that any authorizations deemed necessary by NOAA Fisheries and FWS are completed prior to the commencement of activities under MMS purview.

1.2.1.14 The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act)

The purposes of the Magnuson-Stevens Act (P.L. 94-265, 16 U.S.C. 1801 et seq.) are to take action to conserve and manage the fishery resource off the U.S. coasts; manage the U.S. anadromous species and continental shelf fishery resources; support the implementation and enforcement of international fishery agreements for the conservation and management of highly migratory species; promote domestic commercial and recreational fishing under sound conservation and management principles; provide for preparation and implementation of fishery management plans to achieve and maintain the optimum yield of each fishery on a continuing basis; establish Regional Fishery Management Councils to protect fishery resources through preparation, monitoring, and revision of plans that allow for participation of states, fishing industry, consumer and environmental organizations; encourage the development of underutilized U.S. fisheries; and promote the protection of essential fish habitat (EFH). To promote the protection of EFH, Federal agencies are required to consult on activities that may adversely affect designated EFH. The responsible agency is NOAA Fisheries, Department of Commerce. An EFH assessment for the proposed action has been prepared by MMS and can be found in [Appendix D](#). This assessment includes a list and description of species with designated habitat, potential impacts to those species and their habitat, and proposed mitigation.

1.2.1.15 Migratory Bird Treaty Act and Migratory Bird Executive Order 13186

The Migratory Bird Treaty Act (16 U.S.C. 703-712) is a domestic law that implements the United States' commitment to international conventions with Canada (1916), Mexico (1936), Japan (1972) and Russia (1978) for protection of shared migratory bird resources (USFWS, 2002). The Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the Act has no provision for allowing an unauthorized take, it must be recognized that some birds may be killed at structures such as wind turbines even if all reasonable measures to avoid it are implemented. The USFWS Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, and also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. While it is not possible under the Act to absolve individuals, companies, or agencies from liability if they follow recommended interim guidelines established by USFWS, May 13, 2003, the Office of Law Enforcement and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individuals, companies, or agencies who have made good faith efforts to avoid the take of migratory birds.

The Migratory Bird Executive Order 13186 of 2001 is a step in the creation of a more comprehensive strategy for migratory bird conservation by the Federal government (USFWS, 2007). The Executive Order provides a specific framework for the Federal government's compliance with treaty obligations to Canada, Mexico, Japan, and Russia.

The Migratory Bird Executive Order 13186 of 2001 requires any Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations. The MOU shall support the conservation of migratory birds through integrating bird conservation principles, measure and practices into agency activities and by avoiding or minimizing the impacts of activities to migratory birds. In addition, it shall restore and enhance the habitat of migratory birds, as practical; prevent or minimize the pollution or destruction of the environment for the benefit of migratory birds; design migratory bird habitat and population conservation principles, measures and practices into agency plans and planning processes; ensure environmental analyses of Federal actions or other environmental review processes; evaluate the effects of actions on migratory birds; and promote research and information exchange related to the conservation of migratory birds. All proposed actions by agencies must adhere to the MOU.

The USFWS would lead coordination and implementation of the Executive Order and the Act and provide training opportunities to other Executive Branch agencies and departments. An interagency Council for the Conservation of Migratory Birds would monitor and oversee progress in the implementation of the Executive Order. The Council is to include representation, at the bureau director/administrator level, from the Departments of the Interior, State, Commerce, Agriculture, Transportation, Energy, Defense, USEPA, and from such other agencies as appropriate.

1.2.1.16 National Historic Preservation Act (NHPA)

The goal of the NHPA (P.L. 89-665, 16 U.S.C. 470, et seq.), established in 1966, is to have federal agencies act as responsible stewards of our nation's resources when their actions affect historic properties. Section 106 of the NHPA requires MMS to take into account the effects of the projects that it approves on properties listed on or eligible for listing on the National Register of Historic Places (NRHP), including prehistoric or historic sites, districts, buildings, structures, objects, or properties of traditional religious or cultural importance, and to afford the Federal Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the proposed action.

MMS worked with the National Trust for Historic Preservation to develop the methodology used in the Historic Properties analysis (Section 5.3.3.5). It was determined that three properties could be impacted adversely by the proposed action. Upon release of the draft EIS, MMS will consult with the necessary entities (State Historic Preservation Officer [SHPO], Tribal Historic Preservation Officer [THPO], National Trust for Historic Preservation [NTHP], local government, etc.) under Section 106 of the Historic Preservation Act in order to develop appropriate mitigation.

1.2.2 State Regulatory Permitting and Consistency

1.2.2.1 Massachusetts Environmental Policy Act (MEPA)

The MEPA (G.L.c.30 §§ 61 through 62H, 301 CMR 11.00) jurisdiction occurs when an entity undertakes certain activities in the Commonwealth of Massachusetts that requires one or more State permits but does not involve financial assistance. The scope of an Environmental Impact Report (EIR) document, if required, is generally limited to those aspects within the subject matter of any required State permits that are likely, directly or indirectly, to cause damage to the environment. The MEPA review

process includes an alternative analysis, environmental impact assessments, analyses of consistency with applicable state regulations and policies, and implementation of appropriate mitigation measures.

The applicant filed an Environmental Notification Form with the MEPA Office on November 15, 2001. The Secretary of Environmental Affairs issued an ENF Certificate on April 22, 2002 calling for an EIR and defining the scope of the required EIR. On May 28, 2003, the Secretary expanded the Scope of the April 22, 2002 EIR requirements to include Chapter 91 variance considerations and the Massachusetts Ocean Management Initiative. The applicant filed a draft EIR with the MEPA Office on November 15, 2004. The Secretary issued a DEIR Certificate on March 3, 2005 calling for a Notice of Project Change (NPC) and a final EIR, defining the scope of the required final EIR ([Appendix E](#)).

A NPC was filed with the MEPA office on June 30, 2005. The change involved the relocation of turbines from state waters to Federal waters due to changes in the state territorial 3.5 mile (5.6-km) limits. The effect of the boundary change expanded the 3.5 mile (5.6 km) state territorial boundary further into Nantucket Sound, resulting in 10 proposed turbine locations and an additional 1 mile (1.6 km) of 115 kV submarine cable system falling within the new boundary. MEPA issued a Certificate on the Final EIR on March 29, 2007 (see [Appendix E](#)).

1.2.2.2 Energy Facility Siting Board (EFSB) Review

The EFSB is an independent state review board within the Department of Public Utilities (DPU). The EFSB reviews proposals to construct certain energy facilities, including large power plants, electric transmission lines, and natural gas pipelines. Pursuant to G.L. Chapter 164, § 69J and the regulations at 980 CMR 1.00, 2.00, 6.00, and 9.00, no applicant shall commence construction of a “facility” unless a petition for approval of construction has been granted by the EFSB. Pursuant to G.L. Chapter 164, § 69G, a jurisdictional “facility” includes “a new electric transmission line having a design rating of 69 kV or more and which is one mile or more in length on a new transmission corridor.”

In accordance with G.L. c. 164, § 69H, the EFSB is responsible for implementing energy policies to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. When reviewing proposals to construct electric transmission lines, the EFSB is required to consider several things. First, it must evaluate the need for new transmission resources. Second, it must consider whether activities will be consistent with the enforceable policies of Massachusetts coastal management plan.

The applicant and Commonwealth Electric Company d/b/a NSTAR Electric filed a joint Petition to the EFSB, on September 17, 2002, for an approval of construction for a new electric transmission line located within the mapped 3.5-mile (5.6 km) state territorial sea boundary. The Petition was for electric transmission lines to serve the public interest by transmitting wind-generated alternative energy to the Commonwealth of Massachusetts and New England from the offshore proposed action located in Federal waters in Nantucket Sound. The Petition sought approval for construction of the two jurisdictional 115 kV transmission lines approximately 18 mile (29 km) and 12.5 mile (20.1 km) within the Massachusetts Coastal Zone in length in order to transmit the generated electricity to the New England transmission grid.

In their May 11, 2005 Final Decision⁴, the EFSB approved the joint petition of the applicant and NSTAR Electric to construct two new 115 kV electric transmission lines, approximately 18 mile (29 km) in length, for the purpose of interconnecting a proposed offshore wind energy generating facility in Nantucket Sound with the regional electric grid in New England. This decision was upheld on appeal in December 2006.

⁴ The Final Decision can be downloaded from the DPU’s website at http://www.mass.gov/dte/siting_board.htm.

In addition to the above approval, the applicant filed a petition on November 21, 2007 with the Massachusetts EFSB for a Certificate of Environmental Impact and Public Interest to provide for an exemption from Cape Cod Commission review.

1.2.2.3 Massachusetts Chapter 91 Waterways Regulations

The Massachusetts Department of Environmental Protection (MassDEP) requires written authorization in the form of a license or permit to perform any construction, placement, excavation, addition, improvement, maintenance or removal of any fill or structures in tidelands or other waterways of the Commonwealth. The geographic areas subject to Chapter 91 jurisdiction include certain filled tidelands, flowed tidelands, and submerged lands out to the mapped, 3.5-mile (5.6-km) state territorial sea boundary.

In Chapter 91, the Massachusetts Waterfront Act (G.L. c. 91, 310 CMR 9.00), the Legislature specified its intention to protect the rights of the public in tidelands by ensuring that the uses and activities of tidelands are limited to water-dependent uses or otherwise serve a proper public purpose. The basic goals of the Waterways Program administered by MassDEP include protecting and promoting tidelands for fishing, shipping, marine transportation, infrastructure facilities, marine terminals, and other activities and facilities that cannot reasonably be located away from tidal or inland waters.

Chapter 91 jurisdiction applies to the proposed action relative to the installation and construction of the proposed submarine transmission cables located in and over the submerged lands and flowed tidelands of the Commonwealth in Lewis Bay and Nantucket Sound, as well as the intertidal shoreline area of Lewis Bay at the proposed cable landfall location in the Town of Yarmouth. These cables are located within the Massachusetts Cape and Islands Ocean Sanctuary (CIOS). The applicant filed a Chapter 91 Waterways License application on December 13, 2004.

1.2.2.4 Massachusetts Water Quality Certification (WQC) Regulations

The MassDEP requires that any dredging or dredged material disposal of more than 100 cubic yards (yd³) must obtain a WQC pursuant to 314 CMR 9.04(12) and is subject to the criteria at 314 CMR 9.07 and the requirements at 314 CMR 4.00 (314 CMR 4.00 and 314 CMR 9.00 are adopted pursuant to § 27 of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53).

The transition of the interconnecting 115 kV submarine transmission lines from water to land would be accomplished through the use of horizontal directional drilling (HDD) methodology. To facilitate the HDD operation, a temporary cofferdam would be constructed at the end of the boreholes. The cofferdam would be approximately 65 ft (20 m) wide and 45 ft (14 m) long and would be open at the seaward end to allow for manipulation of the HDD conduits. Approximately 840 yd³ of sediment would be dredged from within the cofferdam pit temporarily and replaced upon completion of the submarine cable system. No removal of sediment outside of the cofferdam would be required. This dredging and backfilling component would be subject to a 401 Water Quality Certificate. In addition, a Section 401 Water Quality Certificate would also be required for the jet plow embedment of the submarine cable. A 401 WQC application was filed with the MassDEP on November 2, 2007.

1.2.2.5 Massachusetts Highway Department (MassHighway) Access Agreements and Massachusetts General Law (M.G.L.) Chapter 30, Section 61 Findings

The MassHighway primary responsibilities are the design, construction, and maintenance of the Commonwealth's state highways and bridges. The MassHighway jurisdiction would apply to the installation of the onshore transmission line route via trenchless technologies (i.e., HDD, horizontal

boring, or pipe jacking) under the State highways Route 28 and Route 6. In addition, the applicant would require MassHighway access agreements for maintenance access to the onshore cable system occurring within state highway ROWs.

The applicant is required to file a Permit to Access State Highway from the MassHighway. Engineering plans and specifications must show that there is safe and efficient access to the state highways thereby protecting the operational integrity of these roadways. Plan review and approval are based on the standards presented in the Manual on Uniform Traffic Control Devices, and any technical policies issued by MassHighway. The applicant must also receive the M.G.L. Chapter 30, Section 61 findings of MassHighway. The applicant filed for an Application for a Permit to Access State Highway on November 1, 2007.

1.2.2.6 M.G.L c. 9 § 27C and Chapter 254 of the Acts of 1988, Per Regulations at 950 CMR 70.00 and 71.00

The Massachusetts Historical Commission (MHC) was established by legislature in 1963 to identify, evaluate, and protect the historical and archaeological assets of the Commonwealth and maintain the State Register of Historic Places. The MHC contains 18 members appointed by the Governor and the Secretary of State. The Secretary of State serves as the MHC chair and appoints the State Archaeologist, who issues permits for onshore archaeological field investigations. The Massachusetts Board of Underwater Archaeological Resources (MBUAR), part of the Executive Office of Environmental Affairs (EOEA), issues permits for underwater archaeological investigations in state waters. These entities ensure field investigations are conducted to applicable standards. The MHC contains the office of the SHPO, who is designated by the Federal Secretary of the Interior to implement Section 106 of the NHPA, as amended. The SHPO nominates significant historic resources in Massachusetts to the NRHP, and reviews Federal projects for their impact on historic properties, in accordance with Section 106 and the Federal regulations of the ACHP.

The MHC provides comments to EOEA, under M.G.L c. 9 § 27C and Chapter 254 of the Acts of 1988, per regulations at 950 CMR 70.00 and 71.00. The MHC advises EOEA as to the presence or absence of significant archaeological or historic resources that could be affected within the state territorial boundaries, and, if those effects are determined to be adverse, would comment on measures to avoid, minimize and/or mitigate those effects. The MHC has been invited to participate as a cooperating agency in the preparation of this draft EIS.

1.2.2.7 Section 1856 of the Magnuson-Stevens Act

Massachusetts Division of Marine Fisheries (MassDMF) is primarily responsible for the protection and enhancement of the Commonwealth's marine fishery resources and for the promotion and regulation of commercial and sport fishing. In addition, for the exclusive purpose of managing highly migratory and OCS fishery resources, state regulatory jurisdiction extends to that part of the pocket of water west of the seventieth meridian west of Greenwich in Nantucket Sound necessary to establish consistent fishing regulations throughout the Sound.

During the MEPA Review Process, the MassDMF performed an analysis of proposed action effects on existing fisheries resources. In addition, MassDMF also reviewed and considered potential effects of the proposed action on highly migratory and/or OCS fishery resources.

The proposed action area is designated as EFH for several fishery resources. An EFH assessment is attached in [Appendix D](#) to address the requirements of the Magnuson-Stevens Act. In addition, MassDMF will have the opportunity to participate and comment on the EFH Assessment process under the MMS NEPA process.

1.2.2.8 302 CMR 5.00 and M.G.L. c. 132A, §§ 13, 16 and 18

The Massachusetts Department of Conservation and Recreation (MDCR) is responsible for the protection of the ecology and appearance of the waters in the five (5) state-designated ocean sanctuaries (out to the mapped 3.5 mile state territorial sea boundary) pursuant to 302 CMR 5.00 and M.G.L. c. 132A, §§ 13, 16 and 18. Portions of Nantucket Sound are located within the CIOS.

The WTG array, inner-array cables and ESP would be located outside of MDCR's Ocean Sanctuaries' jurisdiction. However, portions of the submarine cable connecting the ESP to the landfall would be within the CIOS.

No separate permit or authorization is required by the Ocean Sanctuaries Act (OSA); rather the provisions of the OSA are implemented by the state agencies with permitting authority for a project subject to the OSA, for example, the EFSB, MassDEP (Chapter 91) and the Massachusetts CZMP review process. A transmission line is a permitted use in an Ocean Sanctuary if approved by the EFSB pursuant to the OSA at c.132A §16 and 3.02 CMR 5.08(3).

1.2.2.9 Interconnection Approval by ISO-NE

In New England, the connection of a bulk power generation system into the electricity grid requires a System Impact Study to assess the impact on functionality and reliability of the grid electric system and to assess what if any improvements need to be made to the electric system to safely accommodate the proposed action. On April 2, 2002, the applicant entered into a System Impact Study Agreement with ISO-NE, the independent operator of New England's bulk power generation and transmission system. On October 6, 2005, ISO-NE approved the applicant's application for interconnection pursuant to Section I.3.9 of ISO-NE Transmission, Markets and Services Tariff. The applicant, by letter dated June 19, 2006, requested that ISO-NE revise the projected Commercial Operation Date and Initial Synchronization Date for the Cape Wind Project. On November 9, 2006, the ISO-NE granted the applicant's request to revise the Commercial Operation Date of the Cape Wind Project to November 2010 and the Initial Synchronization Date to June 2009.

1.2.2.10 Compliance with 1997 Electric Utility Industry Restructuring Act (EUIRA)

The EUIRA at Section 50, codified at G.L. c. 25A §11F, introduced a State RPS that requires that specified minimum percentages of retail sales within Massachusetts must come from new renewable resources, which are defined to include wind energy proposals such as the proposed action. Such minimum percentages commence in 2003 with 1 percent, and increase annually at a rate of one-half of 1 percent through 2009, and increase thereafter at the discretion of the Massachusetts Division of Energy Resources (DOER).

1.2.3 Local and Regional Regulatory Jurisdictions and Reviews**1.2.3.1 The Massachusetts Wetlands Protection Act - Yarmouth**

To protect the Commonwealth's wetland resources, the Massachusetts Wetlands Protection Act (WPA), Rivers Protection Act and regulations, and the Yarmouth Wetlands By-laws require approval from the Yarmouth Conservation Commission before activities can take place that would impact jurisdictional wetlands.

MassDEP and the Town of Yarmouth jurisdiction would include the submarine portion of the transmission line located within the mapped 3.5-mile (5.6 km) state territorial sea boundary and onshore cable components of the proposed action. Wetlands have been identified in the vicinity of the transmission cable route seaward and within the State territorial limit of Nantucket Sound and in the town

of Yarmouth waters in Lewis Bay, and along the onshore transmission cable route. The Yarmouth Conservation Commission would exercise jurisdiction over the installation of the onshore cable located within the statutory 100-foot (30.5 m) buffer zone abutting wetland resources, and the submarine portion of cable located in Lewis Bay and out to the mapped 3.5-mile (5.6 km) state territorial sea boundary. In Massachusetts, the permit application is called a NOI. An NOI was filed with the Yarmouth Conservation Commission on November 15, 2007.

1.2.3.2 The Massachusetts Wetlands Protection Act - Barnstable

To protect the Commonwealth's wetland resources, the Massachusetts WPA, Rivers Protection Act, and regulations and the Barnstable Wetlands Ordinance require approval from the Barnstable Conservation Commission before activities can take place that would impact jurisdictional wetlands.

The MassDEP and the Town of Barnstable jurisdiction would include the submarine portion of the transmission line located within the mapped 3.5-mile (5.6 km) state territorial sea boundary and the onshore cable components of the proposed action. The Barnstable Conservation Commission jurisdiction covers the installation of the portion of the submarine cable route located in the town of Barnstable waters in Lewis Bay. The onshore cable route located in Barnstable would not be located within any wetland resource areas and/or buffer zones. An NOI was filed with the Barnstable Conservation Commission on November 15, 2007.

1.2.3.3 Cape Cod Commission

The Cape Cod Commission was created in 1990 by the Massachusetts the General Court (state legislature) pursuant to the Cape Cod Commission Act (CCCA). The mission of the Commission is to manage growth, protect Cape Cod's unique environment and character, and foster a healthy community for present and future generations. The Commission acts as a regional planning and land use agency in the region known as Cape Cod – Barnstable County. The Commission created and implements the Cape Cod Regional Policy Plan (RPP), which is required by the CCCA. The RPP is both a planning and a regulatory agency.

According to the legislation, numerous factors trigger Commission review for proposed developments. Generally, these include: (1) the impact of the proposed development on the environment and natural resources, including but not limited to air, ground and surface water supply and quality; ecological, coastal, historical, cultural, architectural, archaeological, and recreational resources; endangered species habitats, open space, agriculture and aquaculture; and (2) the impact of the proposed development on existing capital facilities, including but not limited to transportation and infrastructure, sewage, waste disposal, water supply, fair affordable housing, and meaningful employment.

The applicant submitted a request to the Cape Cod Commission for approval for the proposed interconnection cables located in state jurisdiction (Cape Cod Commission File No. JR20084), and the Commission issued a procedural denial of the applicant's request for approval on October 18, 2007 due to lack of information. However, an exemption from Cape Cod Commission review is available following a successful petition to the EFSB. The applicant sought such an exemption by filing a petition on November 21, 2007.

Other Local Permits

In addition to the Wetland Permits described above, there are other local permits that may be required, that are not necessarily considered environmental permits but rather engineering permits. These could include local Department of Public Works (DPW) curb cut and street opening permits, building permits, zoning, planning board approval, etcetera.

1.3 PUBLIC SCOPING

In order to develop the scope of study for the MMS draft EIS, MMS requested comments on the proposed action via a public notice in the FR on May 30, 2006 (71 FR 30693). The MMS extended the time limit for the comment period from July 14, 2006, to July 28, 2006 at the request of commenters to allow extra time for development and submittal of scoping comments.

In addition, the proposed action had previously undergone a partial NEPA review with the USACE as the lead agency. During the USACE review process, a draft EIS was issued, and the USACE received approximately 5000 comment letters and email comments on the USACE draft EIS. For purposes of MMS' independent NEPA evaluation, the MMS incorporated all the previous comments originally made on the USACE draft EIS as scoping comments for this draft EIS. MMS also took into account in the scoping process, comments that were made at the USACE public hearings held in Yarmouth, Martha's Vineyard, Cambridge, and Nantucket, Massachusetts. As a result, there are an extensive number of comments, which have been used to develop the content or "scope" of this MMS draft EIS.

The comments were considered in aggregate from both the MMS and the USACE comment and scoping processes. This draft EIS addresses these comments to the extent they are applicable and necessary to reach conclusions as to the scope and extent of potential impacts. The comments were categorized into the following subject categories and a summary of the comments that were received can be found in Section 7.0:

- Regulatory Process
- Alternatives Analysis
- Construction, Operations, Decommissioning
- Geology and Sediments
- Oceanography
- Water Quality
- Air and Climate
- Noise
- Electric Magnetic Fields
- Avian and Bat Resources
- Freshwater and Coastal Wetlands
- Wildlife
- Fisheries – Socio-economic Impacts to Commercial and Recreational Fishing
- Fisheries – Environmental Impacts
- Benthos and Eelgrass
- T&E Species
- Socioeconomics
- Transportation
- Communications
- Cultural Resources
- Aesthetic/Landscape/Visual
- Transmission Interconnection

1.4 AGENCY CONSULTATION AND COOPERATIVE AGENCY STATUS

Agency consultation meetings were held in Boston, Massachusetts on November 2, 2005; June 27, 2006; and February 28, 2007. The purpose of the meetings was to solicit comment and concerns about the project and the scope of the DEIS. MMS received informal comments on a host of issues including the extent of environmental resources impacts (similar to the list of impacts shown above), the adequacy of data to address those impacts, and the scope of the alternatives analysis. The information was then considered along with the public comments to help form the scope of the DEIS. The agencies/tribes consulted to date include:

- NOAA Fisheries Service, formerly National Marine Fisheries Service
- US Army Corps of Engineers
- U.S. Coast Guard
- U.S. Department of Energy
- U.S. Environmental Protection Agency
- U.S. Federal Aviation Administration
- U.S. Air Force
- U.S. Fish and Wildlife Service
- Cape Cod Commission
- Massachusetts Department of Environmental Protection
- Massachusetts Energy Facilities Siting Board
- Massachusetts Executive Office of Environmental Affairs
- Massachusetts Historical Commission
- Wampanoag Tribe of Gay Head (Aquinnah)
- Mashpee Wampanoag Tribe

In accordance with the Council on Environmental Quality Regulations at 40 CFR 1501.6, MMS filed letters inviting agencies to become cooperating agencies in the DEIS process (see MMS consultation letters in [Appendix E](#)). The purpose of bringing cooperative agencies into the process is to assist in the review and development of information and matters related to project design, characterization of resources, assessment of environmental impacts, and mitigation. The following agencies have provided a formal written request to become a cooperating agency (see cooperating agency request letters in [Appendix E](#)):

- U.S. Coast Guard
- U.S. Department of the Army, Corps of Engineers New England District
- U.S. Environmental Protection Agency
- Cape Cod Commission
- Massachusetts Historical Commission
- Town and County of Nantucket
- Town of Barnstable
- Barnstable Municipal Airport

Further details on the agency consultation process and issues of concern are discussed in Section 7.2.

1.5 DEFINITIONS OF IMPACT LEVELS

The following impact levels are used in the impact section of the draft EIS to provide consistency in the assessment of environmental impacts and socioeconomic issues. The conclusions for most analyses in this EIS use a four-level classification scheme to characterize the impacts predicted, if the proposed action or an alternative is implemented and activities occur as assumed.

1.5.1 Impact Levels for Biological and Physical Resources

The impact levels for biological and physical resources are used for the analysis of water quality, air quality, marine and terrestrial mammals, marine and coastal birds, fish resources, sea turtles, coastal and seafloor habitats, cultural resources, and areas of special concern (such as EFHs, marine sanctuaries, parks, refuges, and reserves). The four impact levels are defined as follows:

(1) Negligible

- No measurable impacts.

(2) Minor

- Most impacts to the affected resource could be avoided with proper mitigation, or
- If impacts occur, the affected resource would recover completely without any mitigation once the impacting agent is eliminated.

(3) Moderate

- Impacts to the affected resource are unavoidable, and
- The viability of the affected resource is not threatened although some impacts may be irreversible, or
- The affected resource would recover completely if proper mitigation is applied during the life of the proposed action or proper remedial action is taken once the impacting agent is eliminated.

(4) Major

- Impacts to the affected resource are unavoidable, and
- The viability of the affected resource may be threatened, and
- The affected resource would not fully recover even if proper mitigation is applied during the life of the proposed action or remedial action is taken once the impacting agent is eliminated.

1.5.2 Impact Levels for Socioeconomic Issues

The impact levels for socioeconomic issues are used for the analysis of demography, employment, and regional income; land use, visual and infrastructure; fisheries; tourism and recreation; socio cultural systems; and environmental justice. Although impact levels for direct physical impacts to cultural resources are defined under Section 1.4.1, indirect visual impacts to cultural resources are covered by the criteria below. The four impact levels are defined as follows:

(1) Negligible

- No measurable impacts.

(2) Minor

- Adverse impacts to the affected activity or community could be avoided with proper mitigation, or
- Impacts would not disrupt the normal or routine functions of the affected activity or community, or
- Once the impacting agent is eliminated, the affected activity or community would return to a condition with no measurable effects from the proposed action without any mitigation.

(3) Moderate

- Impacts to the affected activity or community are unavoidable, and
- Proper mitigation would reduce impacts substantially during the life of the proposed action, or
- The affected activity or community would have to adjust somewhat to account for disruptions due to impacts of the proposed action, or
- Once the impacting agent is eliminated, the affected activity or community would return to a condition with no measurable effects from the proposed action if proper remedial action is taken.

(4) Major

- Impacts to the affected activity or community are unavoidable.
- Proper mitigation would reduce impacts somewhat during the life of the proposed action.
- The affected activity or community would experience unavoidable disruptions to a degree beyond what is normally acceptable, and
- Once the impacting agent is eliminated, the affected activity or community may retain measurable effects of the proposed action indefinitely, even if remedial action is taken.